

U.S. Patent Application No. 10/649,347
Amendment dated April 30, 2007
Reply to Office Action of December 28, 2006

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REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested. Claims 1 - 53 are pending in the application. Claims 44 - 53 are new. Claims 30 - 43 are presently withdrawn from consideration.

Claim 28 is editorially amended. New claims 44 – 53 are supported at paragraphs [0009], [0010], [0018], [0037], [0040]-[0053], [0056], [0057], and [0070], and elsewhere. Accordingly, full support exists in the present application for the amendments and no questions of new matter should arise.

Restriction Requirement

At page 2 of the Office Action, restriction was made between allegedly different inventions of group I, claims 1-29, drawn to a method for providing product consistency and controlling particles, classified in class 436, subclass 8, and group II, claims 30-43, drawn to methods of producing a target material and the associated control, classified in class 428, subclass 402+. According to the Office Action, the inventions of groups I and II are related as process of making and product made, wherein the process as claimed can be used to make another and materially different product “such as one that has a plurality of difference [sic] morphological values as created by the process of adjustment which is distinct from the claimed product that has one morphological value.”

Applicants affirm their previous election of group I, claims 1-29, with traverse. New claims 44 - 53 are also drawn to a method for providing consistency and controlling particles, and they should be included with previously elected group I, claims 1-29, for current examination on the merits.

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Applicants traverse the restriction requirement because none of claims 30-43 are directed to the category of invention of a “product made.” Therefore, the rationale of the restriction requirement stated in the Office Action has no basis with respect to the claims as presented.

In view of at least this reason, reconsideration and withdrawal of the restriction requirement are requested. Accordingly, claims 30-43 should be rejoined with the remainder of the claims for examination at this time.

Information Disclosure Statements

At page 3 of the Office Action, the Examiner acknowledges receipt of the Information Disclosure Statements filed 10/27/03; 12/02/04; 3/7/05; and 7/21/05, and cites *Penn Yan Boats, Inc. v. Sea Lark Boats, Inc.*, 359 F. Supp. 948, *aff'd* 479 F.2d 1338.¹ The Examiner indicates that these references have been considered in the same manner as references encountered during a normal search of Office search files.

Rejection of claims 1-29 under 35 U.S.C. §112, second paragraph, for indefiniteness

At page 3 of the Office Action, claims 1-29 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner alleges that the preambles of the claims are directed to “...providing product consistency...” and a method of “...controlling a process...”, but that the bodies of the claims fails to teach any measuring steps where the

¹ Cf., *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1184, 33 USPQ2d 1823 (Fed. Cir. 1995); 37 C.F.R. §1.56 (a) requires, *inter alia*: ‘Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section.’

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consistency and control processes are performed. The Examiner states that, for purposes of examination, the claims are best understood as methods of measuring the claimed parameters and controlling the process to maintain the desired parameters. The Examiner further alleges that these claims are also vague and indefinite regarding what is intended by "interfacial potential," and that this value is not defined in the claims and one having ordinary skill in the art would not be able to determine the claimed interfacial potential value. For the following reasons, this rejection is respectfully traversed.

Applicants respectfully submit that claims 1-29 define the subject matter which they regard as their invention with a reasonable degree of precision and particularity sufficient for purposes of complying with the requirements of 35 U.S.C. §112, second paragraph. Those skilled in the art can ascertain whether a particular embodiment would, or would not be, within the scope of any of claims 1-29. *In re Miller*, 169 USPQ 597 (CCPA 1971).

Applicants point out that the patent law allows an inventor to be his/her own lexicographer with respect to their presented claims. Present claim 1 recites, *inter alia*, a method of providing product consistency including two recited steps in the claim body that involve (a) maintaining at least one morphological value of a particulate material within a first target range, and (b) maintaining at least one interfacial potential property value of the particulate material within a second target range (emphasis added). In paragraph [0018] of the present application, Applicants have explicitly defined the term "maintaining" as follows:

As used herein, "maintaining" can include measuring or analyzing for the stated property and determining whether that value falls within the desired target ranges. If it does, the value is said to be within specifications and is therefore maintained. If it does not, in order to keep the value maintained, some change is made in the process used to prepare the particulate material such that the value is brought back within range. In this way, the method of the present invention provides for product consistency by utilizing a

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system consisting of sampling, testing, comparison, selection, and optional process adjustment so that the product performs substantially the same.

Therefore, when claim 1 is properly read in light of Applicants' own specification disclosure, one of ordinary skill in the art would reasonably understand that the claim *does* teach measuring or analyzing steps, through incorporation of the corresponding specification definition provided for the term "maintaining," where the consistency and control process are performed.

Similarly, the claim terminology "interfacial potential," which the Examiner criticizes as not being defined in the claims and because one of ordinary skill in the art allegedly would not be able to determine its value, is also defined in the corresponding specification. In paragraph [0024] of the present application, Applicants have defined the "interfacial potential" as follows:

The interfacial potential of a particulate material is defined through a measure of a physical phenomenon that depends on the interaction of particulate material with other materials or with itself, after the effects of morphology have been removed. When two particles are in contact with each other the interfacial potential is the cohesion per unit area of contact. When particulate material is mixed into a fluid, the interfacial potential is the adhesion per unit area of the particle. If the measurement is per unit mass then the total interaction depends on the surface area per unit mass and the interfacial potential per unit area.

Regarding the determination of the value of "interfacial potential," the present specification provides general guidance on what is meant in this regard in paragraphs [0042]-[0053], and specific guidance via working examples, such as described in paragraphs [0062], [0065], [0067], and [0069].

Therefore, when claim 1 is properly read in light of Applicants' own corresponding specification disclosure, one of ordinary skill in the art would reasonably understand that the claim

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does incorporate a definition for this term “interfacial potential,” and further that one having ordinary skill in the art would be able to determine its value.

Separate independent claim 28 recites determining, comparing, and adjusting steps, so this claim does not appear to fall within the Examiner’s rationale of this indefiniteness rejection.

In view of at least the above, reconsideration and withdrawal of this rejection is respectfully requested.

Furthermore, newly added claims 44-53 include further details on the claimed subject matter, which even more specifically and particularly sets forth what applicants regard as their invention. This rejection also is inapplicable to them.

Rejection of claims 1-29 under 35 U.S.C. §102(b) over Reszler, U.S. Patent No. 5,974,167

At page 4 of the Office Action, claims 1-29 were rejected under 35 U.S.C. §102(b) as being anticipated by Reszler (U.S. Patent No. 5,974,167). The Examiner alleged that, in light of the above-noted Section 112, second paragraph issues, the invention is best understood as a method of monitoring the quality of carbon black, a metal oxide or silica particles by measuring a parameter of the particle and comparing the measured parameter to a predetermined standard value. The Examiner further alleges that Reszler teaches in Column 5, lines 40+, measuring physical parameters, such as particle size, of carbon black, metal oxides and silica particles. The Examiner also alleges that Column 4, lines 21+ teach a method of measuring the particle size and comparing the measured size to a predetermined standard value. For the following reasons, this rejection is respectfully traversed.

The present invention is directed to resolving a problem associated with particulate material production in which materials that are seemingly made “within “spec” with respect to

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one or more measures of morphology, such as particles size, surface area, structure, porosity, etc., nonetheless do not perform consistently as expected in applications. As such, the “within spec” assessment of a particulate material from a morphological standpoint can represent a “false positive” to some extent. Until now, the industry was not entirely clear why the product would not perform consistently even though the particulate material was within morphological specifications. Efforts to determine the source of such problems only after they emerge in products incorporating the particulate material are inefficient and often both time consuming and expensive. Trial-and-error approaches comparing the effects of adjustments made in the particulate manufacturing process with differences observed in the ultimate product containing the particulate material may resolve the product level problem within a limited context. However, such an approach does not provide a mechanism for intercepting problems at the particulate production level before problems arise in end products that incorporate the particulate material. The present investigators appreciated that the problem of particulate materials that are “within spec,” but perform inconsistently in application, ideally would be addressed as part of a quality control (QC) and/or quality assurance (QA) program implemented at the particulate production level, *before* end-products become involved. Moreover, the present investigators have developed a solution to the problem in this regard, which is reflected in their present claims. The present invention not only provides quality control and/or quality assurance for the particulate material but may also make it easier for a customer to obtain consistency in their end products and any intermediate products containing the particulate material, such as polymer products, elastomeric products, inks, coatings, toners, and the like.

Reszler is not relevant to the subject matter of the claimed invention. Reszler relates to taking a polymer matrix containing filler particles and analyzing the dispersion of the filler

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particles in the rubber matrix using computer imaging and software. Reszler, therefore, does not relate at all to maintaining at least one interfacial potential property value of a particulate material and, in fact, does not even relate to maintaining at least one morphological value of a particulate material within a first target range. As described above and in the present application, "at least one morphological value" and "at least one interfacial potential property value" are defined and are different from each other, and these properties are relevant to particulate material, such as carbon black. Reszler makes no effort to measure and then maintain these properties as set forth in the claimed invention.

Regarding claims 1-29, the Examiner referred to Col. 5, lines 40+ of Reszler, which refers to methods and apparatus for measuring and controlling the quality of the dispersion of filler particles in rubber compounds involving measurements of filler particles in rubber. Indeed, the Examiner's separate reference to Col. 4, lines 21+ of Reszler confirms that whatever quality control or assurance protocols that Reszler is describing are merely those that are implemented at the end-product level, and not upstream at the particulate production level. Reszler clearly teaches measuring the dispersion of filler particles in rubber, in which filler is mixed with polymer, then sectioned for image capture and computer analysis, and if a determined dispersion measurement for the sample falls outside a dispersion reference range for allowable particle numbers or sizes, then modifying a mixing parameter or the chemical composition of the rubber product (e.g., col. 4, lines 23-31, 51-58; col. 15, lines 2-5). Clearly, Reszler only describes implementing his quality control invention at the filled rubber product level.

As can be appreciated, Reszler nowhere suggests controlling any process steps related to the production of the filler material *per se*. Reszler nowhere teaches or suggests any recognition of a problem in which filler particles may have morphological properties that are "within spec"

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yet perform or behave inconsistently in the filled rubber products. Moreover, Reszler nowhere appreciates the importance of maintaining at least one interfacial potential property value of the filler within a target range, in addition to maintaining at least morphological value of the filler within a target range. As demonstrated in the working examples of the present specification, morphological values can appear to indicate that a particulate material is within spec, while the added interfacial potential property measurements serve to reveal the particulates that perform inconsistently. As discussed previously herein (and in the present specification), implementation of quality control at the filled product level, as in Reszler, overlooks the potential serious problem of particulates made "within spec" which nonetheless perform inconsistently in applications. However, the method of the present invention provides product consistency by maintaining both at least one morphological value as well as at least one interfacial potential property value of the particulate material. In this way, it has unexpectedly been found that product quality assurance (QA) and quality control (QC) are vastly improved if, along with measurements of morphology, measurements of values that reflect the interfacial potential of the particulate material are also made.

Therefore, Reszler differs from claim 1 by failing to teach or suggest a method of providing product consistency with respect to particulate material, and instead Reszler is focused only on end products. Reszler also differs from claim 1 by failing to teach or suggest maintaining at least one morphological value of a particulate material within a first target range. As noted above, Reszler instead makes changes in the blending proportions of the filler and rubber, or the chemical composition of the rubber, as the corrective action taken when the filler dispersion falls outside the dispersion reference range parameters. Reszler also differs from claim 1 by failing to teach or suggest maintaining at least one interfacial potential property value

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of the particulate material within a second target range. As noted above, Reszler has nothing to say about an interfacial potential parameter of the filler, nor its maintenance. Reszler also differs from claim 1 by failing to teach or suggest the overall combination of features as recited in present claim 1. Claims 2-27 differ from Reszler for at least the same reasons as their ultimate parent claim. New claims 44-53 also differ from Reszler for at the same reasons as claim 1.

Independent claim 28 recites a method of controlling a process for producing a particulate material comprising steps that also are not taught nor suggested, alone or in combination, by Reszler. As discussed above with respect to claim 1, Reszler does not teach or suggest determining at least one morphological value of the particulate material and at least one interfacial potential property value of the particulate material. Nor does Reszler teach or suggest comparing the morphological value and the interfacial property value of the particulate material to a target morphological value and a target interfacial potential property value. Reszler further fails to teach or suggest, if necessary, adjusting at least one process variable for the process. Claim 29 differ from Reszler for at least the same reasons as its parent claim.

Therefore, in view of at least the above differences that exist between Reszler and the present claims, it is apparent that Reszler fails to identically disclose any of present claims 1-29 and 44-53. In the absence of an identical disclosure to the present claims, Reszler can not anticipate any of the present claims. Accordingly, this rejection should be withdrawn.

Further, the Office Action has not indicated that the present claims are obvious over Reszler, and, even if such an assertion is made, how the above-identified significant differences between Reszler and the present claims would have been suggested by Reszler alone or in combination with other art of record.

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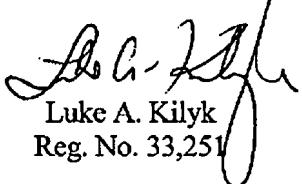
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CONCLUSION

In view of the foregoing remarks, the applicant respectfully requests the reconsideration of this application and the timely allowance of the pending claims.

If there are any fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



Luke A. Kilyk
Reg. No. 33,251

Atty. Docket No. CBK03072 (3600-374-22)
KILYK & BOWERSOX, P.L.L.C.
400 Holiday Court, Suite 102
Warrenton, VA 20186
Tel.: (540) 428-1701
Fax: (540) 428-1720